



MISSOURI CONSERVATIONIST

VOLUME 80, ISSUE 8, AUGUST 2019
SERVING NATURE & YOU

STOP THE INVASION

stop
the
invasion



CARP

Silver carp leap from the water, menacing boaters. Bighead carp devour plankton that native fish need. Grass carp consume aquatic plants. Black carp can gorge on native mussels.

Stop the invasion in the aquatic zone. Catch, clean, and cook carp. Don't move carp or use them as live bait.

Join the fight at MissouriConservation.org



Serving nature and you®

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Ruby-throated
hummingbird

MISSOURI CONSERVATIONIST



ON THE COVER

Sun filters through the trees at Grassy Pond Natural Area.

NOPPADOL PAOTHONG

17-40mm lens, f/10
1/25 sec, ISO 800

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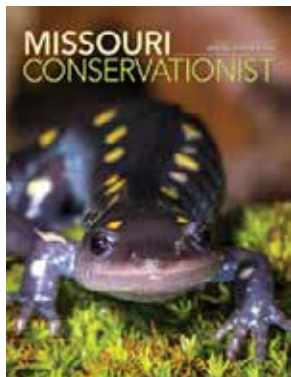
Inbox



Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

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JEFFERSON CITY, MO 65102



SALAMANDERS

Spotted Salamanders was a pleasure to read [June, Page 10]. I was not familiar with this beautiful little creature, but will now try to spy one in our 10 acres of woods or near our pond.

LeaAnn West
via email

MAKE WAY FOR BEARS

Thank you for the informative article on **black bears** in Missouri [May, Page 10]. I've never seen one, but hope to one day. And now after reading your article, I am better prepared if I do. I just hope I have my camera with me!

Dawn Blake Hollister



SQUIRREL HUNTING 101

More than 60 years ago, my friend and I rode the inner-city bus from St. Joseph to Savannah with our shotguns. We got off at Stop 9 and walked to his sister's place to squirrel hunt. With my 410 in hand, we scoured the place looking for the best targets. Finally, a squirrel scurried from one tree to the next and my friend let loose with his 12 gauge before I even saw the target. Good times and fond memories. [June, Page 16]

Phil Sifers Kansas City

MAGAZINE MEMORIES

I taught at Licking Elementary School for 30 glorious years. You sent me the *Missouri Conservationist* all those years, and they were such a help in my second grade. I want to thank you for your wonderful magazine. They furnished me with information to teach the little ones — my aim in life.

I retired from teaching in 1969, but I still enjoy the magazine. I moved to Garland, Texas, four months ago. I write letters to several friends and share some of the articles with them. They will know that Missouri is a nice place.

Colleen Agee Garland, Texas

I want to tell you how much I enjoy your beautiful magazine. My husband of 58 years and I used to read it together cover to cover. He has sadly passed, but I still look forward to every colorful issue. We spent many hours on various Missouri lakes, boating

and fishing, and our vacations on Table Rock Lake. Sometimes we would just sit and enjoy the beautiful scenery. Please don't discontinue your magazine and publish it only online. Reading and looking at the gorgeous pictures brings back so many wonderful memories.

Jeannine Crowe St. Louis

PRAISE FROM INDIANA

I was visiting my son, who lives here, and I came across your free magazine in a local restaurant. I am really impressed by its quality and the real topics that it puts in front of the public. I am a hunter and I fish. I also own land back in Indiana that I apply conservation principles to, so that I can harvest deer, squirrels, and turkey. I also try to get young people involved in all of this. Great job and thank you for bringing such balance to conservation.

Nick Gray Marion, Indiana

DEDICATED READER

I would hate to miss even one issue of the *Missouri Conservationist*. Your articles and photos are the best in the country with regards to conservation and wildlife issues. You also have managed to stay above politics, a great and admirable feat.

Lloyd Houseworth Todd, North Carolina

CORRECTION

Danny Brown was the photographer for and the author of *Hunting Snipe and Rail*, which ran in the July 2019 issue.

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1

1 | Fragile
forktail damselfly
by **Mark
Beckemeyer**,
via Flickr

2 | Indigo
bunting by
tomoro289, via
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3 | Princess and
the frog by **Clay
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2



3

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Up Front

with Sara Parker Pauley

✱ **Imagine spending a couple of days with a modern-day version of Butch Cassidy and the Sundance Kid.** The only difference is that instead of blowing up trains and robbing banks for treasure, these two high-plains desperados are passionately focused on another treasure — Missouri's beloved game bird, the bobwhite quail.

Recently, I had the opportunity to head to the southwest corner of the state to meet up with two such characters, MDC biologists Kyle Hedges and Frank Loncarich (aka Butch and Sundance). Kyle looks like a cross between Butch and Wyatt Earp and sounds just like comedian Jeff Foxworthy. Then there is Frank, the calmer more pensive spirit of the two, yet exuding the same fiery passion for the prairie and its bounty.

It was there on the grasslands of southwest Missouri with its beautiful public-land prairies that the two shared with great enthusiasm the work they and their teams have labored over for the last seven years. Their vital research has been all about unlocking the secrets of what makes quail thrive in Missouri, much like treasure seekers finding piles of gold after years of searching (read more about their research on Page 16).

It was fitting, then, as we made the last stop of our journey on a beautiful prairie filled with vibrant colors of blooming wildflowers, that we heard the distinctive whistles of bobwhite quail from various directions. There it was, treasure all around us, and Butch and Sundance smiled.

Sara Parker Pauley

SARA PARKER PAULEY, DIRECTOR
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Printed with soy ink



mdc.mo.gov 3

Nature LAB

by Bonnie Chasteen

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

FISHERIES MANAGEMENT

Alligator Gar Restoration

✳ It looks virtually indestructible, but the big, toothy alligator gar is critically imperiled in Missouri. “Like many top predators, it has fallen victim to overharvest and habitat loss,” said MDC Fisheries Management Biologist Salvador Mondragon.

In 2007, MDC and the U.S. Fish and Wildlife Service launched Missouri’s Alligator Gar Management and Restoration Plan.

“This is an effort to restore a species that has declined not only in our state but throughout its entire range,” Mondragon said.

To support the restoration plan, Southeast Missouri University (SEMO) graduate student Kevin Lambert worked with staff at MDC’s Big Rivers and Wetlands Field Station (BRWFS) in Cape Girardeau to evaluate the equipment managers use to detect the presence of alligator gar.

“We’ve had a hard time figuring out what gear is most effective,” Mondragon said.

Lambert’s study began in March 2018. His team included SEMO and BRWFS staff. They tested five different techniques in different habitats, at different times of the year, and in different weather. When the study ended in February 2019, the team determined



The study team caught this 100-pound alligator gar with a trammel net. To keep it alive during tagging, a team member flushes water into its gills.

Gear efficiency study will help managers gauge population growth and build a self-sustaining fishery

that trammel nets do the best job of catching alligator gar in the most habitats and in the most weather conditions.

“Trammel net sets were responsible for detecting the smallest, longest, and heaviest specimens, while the lightest-weight fish was captured with electrofishing,” Lambert said.

Mondragon is excited about the study’s results. “This information will help us develop a standard sampling protocol that will improve our efforts to track the fish’s recovery in our state,” he said.

Alligator Gar Study at a Glance

Project Partners

MDC • Southeast Missouri State University

Study Dates

March 2018–
February 2019



Study Area

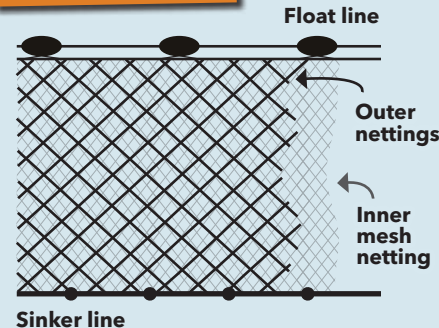
Marquette
North Lake near
Cape Girardeau

Results

Trammel net sets detected the most specimens

- Trammel net sets: 39
- Gill net sets: 16
- Electrofishing surveys: 1
- Mini-fyke sets: 0
- Jugline sets: 0

Trammel net design



In Brief

News and updates from MDC



Counties in orange indicate the CWD Management Zone for this fall firearms deer season.

CWD MANAGEMENT ZONE REDUCED

IMPORTANT CHANGES TO THE UPCOMING DEER SEASON

➔ MDC reduced the number of counties in the management zone for chronic wasting disease (CWD) from 48 to 29. The change will impact restrictions on feeding deer, antler-point restrictions, antlerless permits for some counties, and mandatory CWD sampling.

The 29 counties now included are: Adair, Barry, Cedar, Chariton, Christian, Crawford, Franklin, Gasconade, Hickory, Howell, Jefferson, Knox, Linn, Macon, Mercer, Oregon, Ozark, Perry, Polk, Putnam, St. Charles, St. Clair, St. Francois, Ste. Genevieve, Stone, Sullivan, Taney, Warren, and Washington.

Hunters who harvest deer in any of the 29 counties of the CWD Management Zone during opening weekend of the fall firearms deer season (Nov. 16–17) must take their deer (or the head with at least 6 inches of neck attached) on the day of harvest to a sampling station. Hunters who harvest deer in counties no longer part of the zone are not required to participate in mandatory sampling.

Feeding deer or placing minerals for deer unnaturally concentrates the animals and can help spread CWD. Therefore, the *Wildlife Code of Missouri* prohibits the placement of grain, salt products, minerals, and other consumable natural and manufactured products used to attract deer year-round within counties in the CWD Management Zone. The feeding ban no longer applies to counties removed from the zone.

The antler-point restriction (APR) does not apply to counties in the CWD Management Zone. Protecting young bucks from harvest in areas where CWD has been found can increase the spread of the disease. The APR has been reinstated for some counties removed from the zone.

The increased availability of firearms antlerless permits for some counties in the CWD Management Zone can help prevent undesired populations in local deer numbers where CWD has been found.

Learn more at short.mdc.mo.gov/Zf9 and from the *2019 Fall Deer and Turkey Hunting Regulations & Information* booklet, available where permits are sold.



ELK HUNTING IN MISSOURI

The Conservation Commission gave initial approval for elk hunting during its June meeting. MDC will begin offering a limited season once the herd of about 175 animals reaches a minimum of 200 with an annual herd growth rate of at least 10 percent and a herd ratio of at least four cow elk for every bull elk. An inaugural hunt may be scheduled as early as fall 2020.

Elk hunting would be limited to Missouri residents at least 11 years old who have their hunter-education certification or are exempt from hunter education by age (born before Jan. 1, 1967). Hunting permits would be assigned through a random lottery of all applicants. MDC will require a \$10 application fee to be eligible for the limited hunt with a \$50 permit fee for those selected through the lottery. MDC will limit the random lottery to one application per person, per year with a 10-year "sit-out" period for those drawn. The hunting zone will be limited to Carter, Reynolds, and Shannon counties, but will exclude the special refuge portion of Peck Ranch Conservation Area where elk were initially reintroduced.

For more information, visit short.mdc.mo.gov/ZYU. A public comment period on Missouri's proposed elk season is open through Aug. 31.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: My brother was visiting Table Rock Lake last August when he photographed this moth. Can you help us identify it?

➔ Recognizable for their broad pink patch and single blue eyespot on each hindwing, the blinded sphinx moth (*Paonias excaecata*) is a common breeding resident of Missouri.

These moths undergo four stages of development: egg, caterpillar, pupa, and adult.

With wingspans between 2 and 3¾ inches, adults are short-lived and do not feed. But they do use their strong flying skill to locate new places to lay their eggs, which hatch as small caterpillars in 7-8 days. A variety of deciduous trees — apple, basswood, birch, cherry, elm, hawthorn, hop hornbeam, poplar, willow, and more — host the leaf-eating caterpillars. After eating their fill, the caterpillars pupate in loose soil and emerge as moths. Up to three generations of blinded sphinx moth occur in Missouri each summer.

Cleverly camouflaged, these moths hide from the hot summer sun on tree bark or dead leaves, preferring to keep a nocturnal lifestyle. Blinded sphinx moths live in open forests, along woodland edges, near shrubby areas, and even in backyard gardens. They also are attracted to electric lights. Look for them flying from late June through early September. As fall approaches, blinded sphinx caterpillars seek



Blinded sphinx moth

out sheltered places to pupate and overwinter underground until the following summer.

Q: How many meals a week do eastern copperheads eat?

➔ Copperheads in captivity generally eat one to two mice weekly. Wild copperheads tend to dine far more sporadically. They are best described as opportunists, capable of eating a wide variety of foods, not only warm-blooded prey.

Growing young copperheads will eat as much and as frequently as they can, dining often on rodents, other reptiles, birds, and invertebrates such as insects, snails, and worms. Cicadas are especially nutrient-rich, said Missouri State Herpetologist Jeff Briggler. Young copperheads use the tip of their yellow tail to attract small frogs and lizards who might be fooled into thinking it's a caterpillar.



Great crested flycatcher

Adult copperheads tend to eat larger meals less frequently. Mice form the bulk of their diet, but other rodents — such as shrews, moles, voles, and chipmunks — are also prey. From spring to fall, a copperhead eats when the opportunity presents itself. If a copperhead were to come across a nest of young mice, it may eat all of them and not have to dine again for a month. It's typical for wild snakes to go weeks between meals.

Q: I recently noticed several great crested flycatchers exhibiting strange behavior on our deck. The birds land, spread

their wings, nestle their chests as flat as possible, and turn their heads toward the sky with their mouths open. Can you tell me what they are doing?

➔ These birds are sunbathing. While it may seem counterintuitive during hot weather, birds are thought to do this to distribute preening oil across their plumage, or to get rid of pesky parasites that infiltrate a nest and find homes in their feathers. They stand in a posture that allows the sun to hit as many feathers as possible, usually stretching their wings and tail feathers and flattening themselves on the ground or a perch.



Kevin Lockard

SHELBY COUNTY
CONSERVATION AGENT

offers this month's

AGENT ADVICE

As the summer comes to an end, many people's thoughts turn to fall firearms hunting seasons. Whether you dream of harvesting a bird or a buck or you just enjoy shooting sports, now is a good time to visit one of MDC's shooting ranges. The department has five staffed shooting ranges and several unstaffed shooting ranges located at conservation areas across the state. To find one near you, visit **short.mdc.mo.gov/ZZF**. Don't go into the season unprepared. Make sure your firearm is in proper working order or familiarize yourself with a new firearm. The more time you spend shooting, the more proficient you will be afield. See you on the range!

What IS it?

Can you guess this month's natural wonder?

The answer is on
Page 9.



INVASIVE SPECIES

INVASIVE CARP

Invasive nonnative species destroy habitat and compete with native wildlife. Do what you can to control invasive species when you landscape, farm, hunt, fish, camp, or explore nature.

What Is It?

Native to Asia, bighead (*Hypophthalmichthys nobilis*), silver (*Hypophthalmichthys molitrix*), black (*Mylopharyngodon piceus*), and grass (*Ctenopharyngodon idella*) carp were introduced in the United States to clean algae from commercial fish farms and sewage treatment plants. They've spread in recent decades due to releases or escapes caused by flooding and now thrive in many bodies of water. Common carp (*Cyprinus carpio*), also native to Asia, were purposefully stocked in the wild beginning in 1879 because of its popularity as a food fish.

Where Is It?

Invasive carp are found in reservoirs, ponds, and deeper parts of large rivers and lakes throughout Missouri – the Mississippi and Missouri rivers and lower reaches of their major tributaries (such as the Osage), and tailwaters of Bagnell Dam (on the Osage) and Cannon Dam (on the Salt River). They are occasionally found in nearly any stream in the state, but most of these are the result of escape from impoundments.

Why It's Bad

Both silver and bighead carp are aggressive, long-lived efficient plankton consumers that can outcompete native species for these valuable resources. Plankton is an important food source for paddlefish, gizzard shad, bigmouth buffalo, and others. Black carp feed on mussels, many of which are declining to the point of being endangered. In addition, black carp prey on algae-eating snails. Without snails, the composition of an aquatic community can be radically altered. Grass carp can eat the equivalent of their body weight in plant matter in a day. And at 50 pounds or more, that's a significant amount of foliage and potential habitat removed from the water. Where overpopulated, common carp compete with native fish for food and space.



A silver carp and bighead carp.



As aggressive and active omnivores, carp's feeding activities cloud the water and uproot plants, altering habitats and impacting popular fisheries.

How to Control It

✓ LEARN TO ID YOUNG INVASIVE CARP

There's a close resemblance between shad and silver and bighead carp when they are 2 to 6 inches long. When casting nets for small fish, like shad, for catfish bait, know your catch. For help with fish identification, get a free copy of MDC's *Know Your Catch* by emailing pubstaff@mdc.mo.gov or calling 573-522-0108.

✓ DON'T USE LIVE CARP AS BAIT

It is illegal to use bighead, silver, and black carp as live bait, but all anglers can help prevent the spread of invasive carp by not using any as live bait. It is recommended that netted bait fish be placed on ice in coolers. The temperature shock kills the carp in 15–30 minutes but keeps them fresh for use as bait.

✓ DON'T DUMP UNUSED LIVE BAIT

Anglers should use caution when using live bait in any lake or river, including small community lakes. Unused bait from any source should be contained and put into the trash rather than dumped into the water.

For more information, visit short.mdc.mo.gov/ZfO.

USE "AUTO-RENEWAL" FOR YOUR PERMITS

Renewing Missouri hunting, fishing, and trapping permits is now easier and more convenient through our new online permit auto-renewal service. It allows online permit buyers to automatically renew their permits prior to the start of the next season or permit year so they never have an expired permit when they need it most.

Participation in auto-renewal is voluntary, and the service can only be activated by the permit buyer. There are no additional fees for the service. Permit buyers must have a valid email address and credit card to participate. The auto-renewal service will send personalized emails to participants of upcoming permit renewals and notifications of successful renewals and associated charges.

Enroll in auto-renewal at mdc.mo.gov/buypermits during an online permit purchase or by using the "Manage Your Account" feature. Learn more about permit auto-renewal at short.mdc.mo.gov/Zff.

DISCOVER NATURE AT THE MISSOURI STATE FAIR

Visit the Conservation Building from 9 a.m. to 7 p.m. Aug. 8–17 and 9 a.m. to 6 p.m.

Aug. 18 to see live fish, snakes, turtles, amphibians, and other native animals. Learn about and see displays of native plants that help butterflies and other important pollinators. Ask MDC staff conservation-related questions, get educational materials, and have fun.

Don't miss our air-conditioned Kids' Xplor Zone (formerly Discovery Room) between 10 a.m. and 6 p.m. for hands-on fun discovering nature through crafts and other activities.

In celebration of Smokey Bear's 75th birthday, we will be at the Smokey Bear tent near the grandstand Aug. 9 from 9 a.m. to 3 p.m. with crafts, giveaways, and treats. Join us in our outdoor pavilion Aug. 14 for a Smokey Bear Dance Party at 1 p.m.

Enjoy these other free conservation-related programs at our outdoor pavilion:

- **Live Raptors:** See a live eagle and other birds of prey with Dickerson Park Zoo Aug. 8 and Aug. 17 at 11 a.m., 1:30 p.m., and 4 p.m.
- **Clean and Cook Fish:** Learn to prepare fresh catch Aug. 9 and Aug. 10 at 11 a.m. and 1:30 p.m.
- **OGT Trailer:** Visit MDC's Operation Game Thief trailer all day Aug. 11 and 12.
- **Be Bear Aware:** Learn about black bears in Missouri Aug. 13 at 11 a.m. and 1:30 p.m.
- **Wildlife Vet:** Visit with our State Wildlife Veterinarian Sherri Russell all day Aug. 14.
- **Get Moving with Smokey:** Join us for a Smokey Bear Dance Party Aug. 14 at 1 p.m.
- **Mushroom ID:** Learn about Missouri mushrooms Aug. 15 at 11 a.m. and 1:30 p.m.
- **Historic Sawmill:** See a working model sawmill Aug. 16 at 11 a.m. and 1:30 p.m.
- **Dutch Oven Demo:** Learn about Dutch oven cooking Aug. 18 at 11 a.m. and 1:30 p.m.



WHAT IS IT? COMMON SCOURING RUSH

Common scouring rush, also called horsetail, are green reedlike stems that form in dense colonies along waterways, roadways, and railroads. These hollow shoots, which can grow more than 5 feet tall, produce conelike strobili or spore-bearing reproductive structures. The strobili can grow up to an inch, and the spores are shed between March and August.





HAPPY BIRTHDAY, SMOKEY!

CELEBRATING SMOKEY BY SUPPORTING
LOCAL FIRE DEPARTMENTS

by Holly Dentner

Smokey Bear, the world's most popular wildfire prevention expert, turns 75 years old this year. For as long as Smokey's been around, MDC has been fighting wildfires and helping Smokey spread the word of wildfire prevention.

Back when Smokey was just a bear cub, department staff would respond to and suppress almost all wildfires that occurred across Missouri's landscape. As the state's population has grown, so, too, has the number of local fire departments. That means the department's role has evolved. Now rural fire departments suppress over 90% of wildfires that occur in Missouri.





YEAR PREVENTING WILDFIRES

Fighting wildfire in
Missouri takes an
integrated approach.

PHOTOGRAPH BY
DAVID STONNER



Rural fire departments are being equipped to respond quickly and effectively.



5/4-ton military truck converted to a brush truck



“That’s a significant accomplishment, especially considering most are staffed by volunteers and operate on very limited budgets,” said MDC Fire Program Supervisor Ben Webster. “It shows their commitment and dedication to their communities and the natural resources around them.”

In Missouri, wildfire can occur year-round, but fall and early spring pose a significant fire danger when lots of dead grass and leaves serve as potential fuel. Anywhere from 25,000 to 30,000 acres burn each year. When a fire starts, it sometimes requires MDC staff and volunteer firefighters working together.

“We still respond to wildland fires with heavy equipment and boots on the ground, but our role has changed,”

said Webster “We make sure local fire departments have the tools, training, and equipment they need to suppress wildfires themselves.”

Allocating Equipment and Property

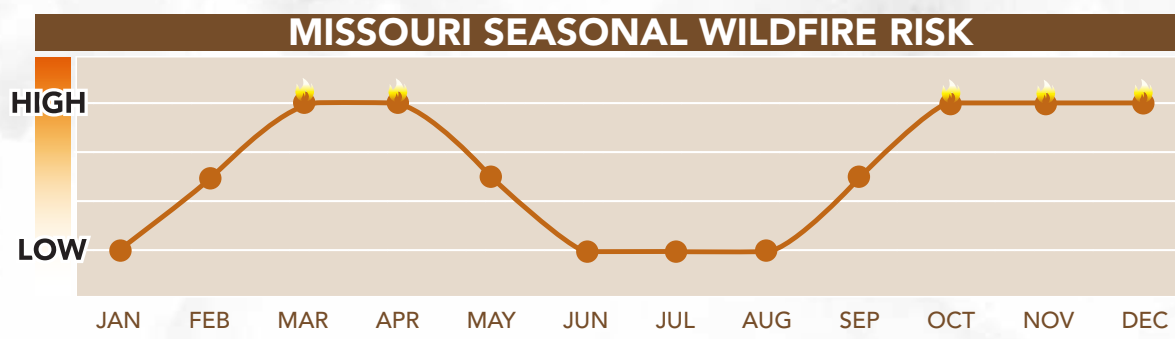
Each year the department funnels equipment and supplies to rural firefighters so they can keep Missouri’s landscapes safe. The equipment comes from federal excess property programs made possible through agreements with the U.S Forest Service and the U.S. Department of Defense.

MDC can access a variety of property from these programs, including vehicles, water tanks, trailers, generators, pumps, and even medical supplies.

Once the federal agencies have no more use for the property, it’s made available through reutilization offices across the country.

In Missouri, it’s the department’s job to work with fire departments to find out what they need, and then be on the lookout for available property. Staff at the MDC Rural Forest Fire Equipment Center in Lebanon keep a spreadsheet of all the fire departments’ requests. When they’re alerted to the availability of new equipment, they check the spreadsheet and make a request through the office where the equipment is located.

“If the department is selected as the recipient of the surplus property, we pick it up,” said Kent Bassett, who manages the center. “Our facility here in Lebanon



Wildland fire risk peaks with the presence of dead grass and leaves in the fall. The spring green-up causes wildfire probability to become relatively low.



International cab and chassis converted to a tanker truck



MORE HELP FOR SMALL COMMUNITIES

Every year, fire departments serving communities of less than 10,000 can apply for a 50% reimbursement grant to help buy equipment. These Volunteer Fire Assistance grants have been supplying equipment to small rural fire departments for over 30 years.

Approved applicants are reimbursed for up to half of the equipment's purchase price, with a maximum reimbursement of \$3,000. Typically, that means items such as drip torches, radios, backpack leaf blowers and pumps, fire resistant clothing, boots, brush rakes, and more.

Last year the department awarded grants to 184 rural fire departments, totaling \$420,198 for safety and firefighting gear. Funds for the grants are provided by MDC and the U.S. Forest Service.



is the hub for every item that's eventually routed to help fight wildland fire."

To be eligible, fire departments must serve communities of less than 10,000 people. They work with local MDC forestry staff to submit requests, which are reviewed, scored, and prioritized. Budget, response capability, and need are all evaluated as part of the process.

Some rural fire departments have a dedicated tax base, while others are membership driven. They might have enough of a budget to handle the daily costs of fuel and equipment storage, but few have the flexibility to purchase brand new vehicles and equipment.

"You can have bake sales and fish fry fundraisers every day, but that will never get you enough to buy the big-ticket equipment needed to fight fire," said Bassett.

The surplus property programs do require a repair and maintenance commitment from local fire departments. Everything must be response ready within six months of its acquisition. Some property is on a loan-only basis, and other equipment becomes fire department property after they've met certain usage requirements.

Surplus Property Keeps Rural Fire in Business

Fire Chief Gerald Dick is responsible for wildfire control on the 40 square miles of Leesville Township, better known by its official name — the Tightwad Fire Protection District. Dick and the handful of volunteers at Tightwad take care of an area bordered by the U.S. Army Corps of Engineers property at Truman Lake. Dick says most people

don't realize the expense and know-how needed to fight wildfire.

"You can't just take a standard fire truck and use it for wildfire. You've got to have something customized to go off road," said Dick. "And there are no hydrants, so whatever water you need, you have to haul with you."

There's a fine line between usable surplus and junk, and Dick is responsible for making the vehicles functional and



keeping their equipment in decent shape. He says over 80% of their vehicles and equipment have been acquired through the excess property process.

"We get what we can, and we keep it running," said Dick. "Otherwise, we wouldn't be here."

Those specialized trucks and water tanks don't come cheap. Dick jokes that people assume he's always on the lookout for a good deal, coming from Tightwad, but the reality is much more serious.

"Turning an old army vehicle into a wildfire truck instead of buying a new one is the difference between spending a few thousand dollars versus hundreds of thousands."

Relying on Volunteers

Fire Chief Don Gaston leads the Houston Rural Fire Association and serves the area surrounding the City of Houston in Texas County. People pay a membership fee to belong and receive service. While they have about 800 members, there are no paid fire department staff.

"We rely on volunteers to staff the fire association," said Gaston. "We have 18 people right now, and most work full-time jobs, too."

Gaston says the association gets much-needed equipment from the excess property center all the time. They've received brush trucks, water pumps, and even picked up some surplus sweaters once.

"They were probably jacket liners or something, but the guys used them a lot," said Gaston. "That just shows we will use whatever we can. It doesn't go to waste."

From sweaters to brush trucks, Gaston confirms that the equipment they receive is necessary for them to do their jobs.

"For a lot of small fire departments, we're just one big breakdown away from being unable to respond to a fire," he said. "We have to depend on the excess property because budgets are tight."

Ready for Anything

Kevin Hurtubise is chief of the Rocky Mount Fire Protection District in Morgan County. With their tax-based



The Rocky Mount Fire Protection District received this Stewart and Stevenson military 4 x 4 truck (above) and 5/4-ton truck (left), which were converted to meet wildland firefighting needs.

structure, they have three paid staff members and 15 volunteer firefighters. Most of their firefighting takes place on the hilly, wooded landscape of the Lake of the Ozarks.

"While 70% of our work is wildfire, we have to be prepared for the tents, RVs, and other structures you might not usually find out in the woods," said Hurtubise. "The Lake is a big tourist destination, so we go from a winter population of 3,400 people to over

150,000 in the summer season."

More people means a higher risk of accidental fire. The firefighters stay ready with vehicles at four different stations across their 56-square-mile area, ready to respond.

"Just in the last few years, we've acquired a brush truck and a military vehicle we converted to our pump truck," said Hurtubise. "We couldn't equip all our stations and respond to fires without the equipment we've received."



"We couldn't equip all our stations and respond to fires without the equipment we've received."

— Rocky Mount Fire Protection District Chief Kevin Hurtubise

Remember Smokey: You Can Help

Fire departments who take advantage of these programs cover small towns and plenty of countryside. They protect Missouri's farmlands, forests, and open prairies, and all the people and creatures who live there. They can use your help.

Always follow Smokey's advice — Only You Can Prevent Wildfires. Get tips for being safe at short.mdc.mo.gov/Zxe or at smokeybear.com.

Think about becoming a volunteer firefighter. There is a statewide shortage of volunteers, and they're looking for people who are willing and able to help.

Celebrate Smokey's birthday, but skip the candles. ▲

Holly Dentner is the forestry division's outreach and communications program supervisor.



BURNING TRASH OR LEAVES? WATCH OUT!

While Missouri doesn't see the massive wildfire devastation that occurs in western states, Smokey Bear's message is still critically important here. Anywhere from 25,000 to 30,000 acres burn in Missouri every year, and 99% are human caused.

Most of Missouri's wildfires are accidental, thoughtless, and totally preventable. Burning trash or other debris on a windy day, carelessly tossed cigarettes, children playing with matches, and improperly extinguished campfires are usually to blame.

Some wildfires in Missouri are deliberately set. Operation Forest Arson is a statewide initiative to stop arsonists, and citizen cooperation is essential.

Any citizen can anonymously call and report an arson violation and potentially collect a reward.



**Arsonists
can be reported at
1-800-392-1111.**



a New Approach *to* Quail

GRASSLAND MANAGEMENT KEY TO QUAIL RECOVERY

by Francis Skalicky



A technician uses
radio telemetry
equipment to track
quail on a grassland
conservation area.

PHOTOGRAPH BY
NOPPADOL PAOTHONG

Kyle Hedges had pulled the trigger on many fast-flying bobwhites in his lifetime, but this quest for quail was different.

He had neither a shotgun nor bird dog as he made his way through the shrubs and open areas of the Bois D'Arc Conservation Area (CA) in Greene County. Also contrary to normal hunting routine, Hedges needed the bobwhites he was searching for to stay put, not flush. This was so the radio telemetry gear the MDC wildlife management biologist was toting this early September day could make solid connections with transmitters attached to quail he hoped were nesting in the surrounding briars and bramble. The electronic "beeps" coming from Hedges' transmitter offered encouraging information about the hatching of a new generation of bobwhites at Bois D'Arc CA and the birth of new quail management strategies for all of Missouri.

Hedges and fellow MDC Wildlife Management Biologist Frank Loncarich are the lead researchers on an MDC research project focused on quail nesting, brood rearing, and habitat selection. The data coming out of this five-year study, which concluded in September 2018, is bringing several alterations to the fabric of quail management in Missouri.

"We're not suggesting the quail management done in previous decades was wrong," Hedges said. "It very likely worked for what we had back then when we had a lot of small farms and a lot of land broken up into small fields and small pastures. But the landscape has changed and what this study seems to be suggesting is that nowadays, there might be a better way of doing things."

At the heart of this research project is a bird Missourians love to love — the northern bobwhite quail (*Colinus virginianus*). The eastern bluebird may be the state bird but Show-Me Staters who have any type of link to rural Missouri also have strong feelings for this plump brownish creature adorned with attractive flecks of white and black.

"Across Missouri and throughout the Midwest, many people have some type of historical association with quail," Hedges said. "Either they hunted them, or their parents or grandparents hunted them. Today, some landowners looking for habitat advice tell us they don't even want to hunt them. They just want quail on their property, so they can hear them whistle each spring. That familiar bobwhite call brings back all those memories of the quail's good old days."

Learning From the Past

Bringing back the good old days of quail may require changing some of the good old ways of management. That's what the results of Hedges' and Loncarich's project are indicating. The study compared how quail did in food plot areas — the traditional model of bobwhite management — with how they did in grassland areas, a newer strategy.



The MDC research project focused on bobwhite quail habitat selection preferences and nesting success. Technicians trapped, collared, and banded 60 quail on each study site in early spring.

"This study was not a result of something we only saw as area managers, but as hunters, too," Loncarich said. "We were seeing more quail on grassland areas we managed and also where we hunted. When we started seeing that, we started asking questions."

Hedges and Loncarich have traveled a long and scientific road to find the answers to those questions. Their research project involved more than 1,300 radio-collared quail and more than 500 nests monitored across 14,000 acres of public land. At each study site, the work began with the radio-collaring of 60 male and female quail. (Males do a portion of the egg-sitting duties, so it was important to collar both sexes.) Once a nest was located and identified as an incubating site, it was monitored three to five times per week until the estimated hatch date. Then the brood was periodically monitored. Throughout this process, habitat preferences were noted to see what kind of habitat treatment was being selected.



Life of a Bobwhite

- Most quail live less than one year, whether they are hunted or not



Technicians tracked quail from April through September to capture the entire reproductive season from pairing through early covey formation.

Study Results

And what did the study show?

- ✔ Grassland sites had a 12% higher nesting success than traditional food plot sites.
- ✔ Adult survival was also better on grassland sites than food plot sites.
- ✔ In large grassland sites, both adults and chicks preferred areas that had been burned or grazed by cattle in the last 12 months. This indicates quail and their broods may have a much higher preference for this type of land than was previously believed.
- ✔ Conversely, if a grassland area had not been burned or grazed in the past 12 months, quail broods spend minimal time there. Idle grass appears to be too thick for quail to use throughout much of the breeding season.

The study also revealed new knowledge about nesting. The peak of Missouri's quail hatch was thought to be mid-June but in the monitored nests, the first nesting peak occurred the last week of June and nearly as many nests were hatched in July and August. More than 50% of all nests monitored didn't start incubation until after July 1. Some of these were renesting efforts, but many were first-of-the-year nests.

TRAPPING: FRANK LONGCARCH; GLUING: KYLE HEDGES; BANDING, RELEASE, TELEMETRY, QUAIL: NOPPADOL PAOTHONG



Courting pairs form April-May

Either male or female will stay with brood for three weeks

Chicks hatch fully-feathered and mobile

Hatching begins in June and continues throughout the summer



Coveys of 10-20 form in October and stay together through winter

Hens lay first nest of 10-20 eggs and incubate for 23 days



Flight abilities develop at 2-6 weeks old



Juveniles nearly size of adults by 12-16 weeks old



Coveys roost shoulder to shoulder to keep warm

(Below) Traditional management at Talbot Conservation Area dissected by strip cropping, grass strips, and tree rows. This model has been utilized on most conservation areas around the state for several decades. (Right) Grassland management at Stony Point Prairie. Minimal trees and scattered shrub clumps amongst continuous usable space proved to be the superior combination for quail production.



It's hoped the findings of this research project — the largest radio telemetry study of quail ever done in Missouri — will help a bird that has struggled in recent decades in Missouri and elsewhere across the Midwest. Long-time wing shooters remember the halcyon days of Missouri quail hunting 50 years ago when the state's annual harvest topped 3 million birds. These days, statewide surveys indicate less quail abundance and greater habitat challenges. Today, Missouri's landscape has a higher prevalence of fescue and other nonnative grasses that are less friendly to quail. Farming practices have also changed. Today's fields provide quail with fewer overgrown field corners, weedy fencerows, and less grain left in fields. Add these factors to the age-old challenges of nest predation and unfavorable weather and it creates a landscape that has many more challenges for quail than it did a half-century ago.

Ironically, one factor that doesn't have as big of an impact on the sustainability of quail populations as some might think is hunting pressure. Studies have shown the majority of quail live less than one year whether they're hunted or not.

Two of the primary keys to bobwhite abundance is nesting and brood-rearing success, two processes that are completed before Missouri's Nov. 1–Jan. 15 quail hunting season occurs. If a quail can hatch its eggs (a process that takes about 23 days) and successfully rear its brood (a three-week process) in its first year of life and, the next year, those offspring have successful

broods of their own in their year of existence, an exponential cycle of growth is created.

Thus, an important tool in keeping quail thriving on Missouri's landscape is to gain a better understanding of nesting and brood-rearing habits and habitat. Improving the future of quail in Missouri lies squarely on the findings of Hedges' and Loncarich's project.

Missourians Care About Quail

"Ultimately, the goal of this study is to determine how to best manage for quail in today's landscape," Loncarich said. "Actually, this goes back to the fundamentals of quail management, which is to maximize usable space. That's what we're doing. We're trying to maximize the usable space for quail on our management areas."

In 2018 alone, MDC implemented management practices on approximately 69,100 acres of public lands to benefit quail. MDC staff provided technical assistance and/or funding for an additional 77,800 acres of private land. Having nearly 150,000 acres of habitat management occurring each year specifically for quail is an indication of what many state residents already know — Missourians care about quail.



“The preliminary results of this study, combined with those from other studies conducted around the country, are causing us to pause and reevaluate the way we approach habitat management on public lands, as well as our advice to private landowners interested in quail management,” said MDC Small Game Coordinator Dave Hoover.



Hedges and Loncarich plan to present their findings to other biologists in Missouri and other states, but their goals for the data go beyond Power Point presentations to their peers.

“We hope to use this information to guide future quail management in Missouri,” Hedges said. “We hope we can improve quail populations on some of our public areas and, where the landscape is favorable and landowners are interested, we can hopefully improve the population across both public and private lands.”

“Although there is more work to be done, this should excite all Missourians that care about quail and the many other species that stand to benefit,” Hoover said. “We are very focused on making a difference at the landscape scale.”

“This is a quail research project — that’s true — but it is much more,” Loncarich said. “This project has the ability to fundamentally change how we manage for quail in Missouri going forward.” ▲

Francis Skalicky is the media specialist for MDC’s Southwest Region. He lives in Springfield and enjoys the outdoors with his family as often as possible.

These young
opossums learn
survival skills from
their mama while
clinging to her fur.

PHOTOGRAPH BY
JIM RATHERT





Awesome Opossums

AMERICA'S ONLY MARSUPIAL PACKS
SECRET SUPERPOWERS

Opossums get no respect. Granted, they're not one of Missouri's most beautiful creatures, and their habit of getting pancaked on highways might lead you to believe they're dim-witted. Opossums are also notorious for digging through garbage or getting trapped in garages. But take a closer look at this curious creature, and you'll find opossums are actually awesome.

When threatened, an opossum will bare its teeth. But if a predator persists, the opossum will “play possum,” a habit called thanatosis, or death feigning.



Unlovely but Unique

Opossums' beady black eyes, scruffy gray fur, and scaly pink tails make them look like overgrown rats to some, but they aren't closely related to rats or any other rodent. Opossums are marsupials, just like kangaroos and koalas, and as America's only marsupial, raise their babies in a pouch.

Opossums look scruffy because they don't have thick, sleek coats like muskrats or mink. They aren't able to put on much body fat, either, so they can't go long without eating. This means winter can be rough for an opossum. They often lose toes and the tips of ears and tails to frostbite because those parts aren't fur-covered. That said, this Southern native (its scientific name is *Didelphis virginiana*) has adapted to survive winter as far north as Canada.

Opossums won't win any beauty contests, but they may take the prize for puzzling predators.

Furry Fakers

Opossums usually scurry to safety if danger threatens. But when something catches one by surprise, it bares its 50 teeth — the most of any Missouri mammal — and hisses, trying to bluff its way out of danger.

If a predator refuses to back off, however, the opossum collapses, appearing to be dead. Its breathing slows. It slobbers, and blows snot bubbles out its nose. Perhaps because opossums are famous for frothing and drooling when they're “playing possum,” they've gotten a reputation for spreading rabies. In fact, opossums are resistant to rabies.

While it's down and out, the opossum may also release a green fluid from its rear end that makes it smell worse than usual. Most predators lose their appetite at this point and leave the opossum alone.



Scientists call opossums' habit of playing possum thanatosis, which means "death feigning." But this response to danger isn't playing or faking. Thanatosis is completely out of the animal's control. It's like overly stressed humans fainting. Threatened opossums can appear dead from four minutes to four hours. Once the threat leaves, the opossum's ears begin to twitch, and it slowly wakes up.

No doubt this unusual adaptation helps opossums survive a few dangerous encounters in their otherwise short lives.

Live Fast, Die Young

Opossums don't live long. Three-year-olds are rare, and 4-year-olds are almost unheard of. To make up for their short life spans, opossums don't waste much time before they start breeding.

They find a mate about seven months after they're born. After a 12-day pregnancy — the shortest of any North American mammal — a mother opossum gives birth to six to 20 babies.

Pouch Potatoes

Newborn opossums are about the size of kidney beans — 10 could fit in a teaspoon. The babies crawl from under their mom's tail and make their way toward her pouch. Although the distance is short, the newborns are naked, blind, deaf, and have just two working legs. For them, the journey is a life-or-death race to find a space in the pouch, and some never cross the finish line.

Once inside, each baby clamps down on a nipple — mama opossums usually have 13 arranged in a "U" — and don't let go for nearly two months. While they nurse on mom's milk, the babies grow to chipmunk size. The pouch is fur-lined, and it stretches as the babies get bigger. Mom can open the pouch to cool her babies when they're hot or clamp the pouch shut to keep her babies dry when it's wet.

Having a pouch allows mama opossums to stay mobile. They don't have to return to a den or nest every day — they carry their den with them.

Mother Minivans

When the babies are about 2 months old, they crawl out of the pouch. They're still not able to survive on their own, so the mother opossum becomes a mobile home. The youngsters ride atop her back, clinging to fur as she forages for food.

While riding, young opossums learn survival skills, such as what to eat and how to avoid predators. When they are 100 days old, they become too heavy to hitch rides. But by this time, they're able to fend for themselves.

Opossums have the
shortest pregnancy of any
North American mammal —
12 days.



Props for Opossums

More people are showing love for opossums on Facebook and other social media. It's great to see a rise in respect for one of Missouri's most unusual wild animals, but it's also important to know the facts about opossums and their needs. If you love opossums, the best thing you can do for them is provide natural habitat. Plant a few persimmon trees, don't rake your fall leaves, and make a little brush pile in an out-of-the-way place. While you may be tempted to adopt young survivors of road-killed mothers, it's best to just move them into the woods, where they will remain natural members of their ecosystem. Some may survive, and others may die, but this is nature's way for all wildlife.



Opossums have thumbs on their feet that help them grip branches when climbing.

Built for the High Life

An opossum's tail is prehensile, meaning it can curl around things. Opossums can't hang by their tails except for short periods, but they do wrap their tails around branches for balance.

Opossums have thumbs on their feet. These toes, called halluxes, are used to hold on to branches when climbing. Although they're not as nimble as squirrels — opossums plod rather than scamper — they're at home in the trees.

Drifty Gypsies

To an opossum, the world is an endless buffet. And when food is everywhere, it doesn't matter where you sleep, as long as your bunk is dry, sheltered, and safe. Opossums wake shortly after sundown and wander about, shuffling and snuffling for food. When the sun begins to rise, they bed down wherever they wind up, often in a tree cavity, squirrel nest, hollow log, brush pile, abandoned groundhog den, or under a house. Opossums use their prehensile tails to gather leaves for a bed.

Nature's Vacuum Cleaners

Opossums are omnivores with a capital "O." These living, breathing vacuum cleaners eat anything they can find, including nuts, fruits, insects, worms, frogs, snakes, birds, eggs, rodents — even garbage and dead animals.

In an experiment with dogs, cats, and other intelligent animals, opossums scored second in their ability to remember where food is and then locate it. The only animal to outscore them was humans.



Garden Gurus and Snake Snarfers

Got an opossum in your garden? Lucky you. It will clean up fallen fruit and control pests while they're at it. State Wildlife Veterinarian Dr. Sherri Russell emphasized the importance of opossums in gardens. "Eating rotten fruit keeps our environment tidy," she said. When opossums eat rotting fruit, they reduce the risk of flies bringing diseases to gardens. They also eat pests that destroy gardens, such as snails, grubs, beetles, mice, rats, and gophers. "Opossums are an important part of the ecologic web," Russell said.

If an opossum can't find a nice garden to tend, it will make do with dirty, greasy burger wrappers and plastic snack cake packaging. Their bodies produce chemicals to protect them from the plastic and poison they consume. They're even immune to snake venom, so rattlesnakes and copperheads occasionally find themselves on the menu.

MDC Wildlife Damage Biologist Jim Braithwait said he once received a phone call from a frantic family who said they had "a major snake problem." Braithwait recommended they try attracting opossums to their yard. A few months later, the family called him back to say that their snake problem had diminished thanks to a friendly opossum.

Tick Terminators

Opossums have an impressive record when it comes to killing ticks. Although they attract about as many ticks as any other Missouri mammal, they're also fastidious groomers. If they find a tick while grooming, they lick it off and swallow it. Every season, an opossum can kill around 5,000 ticks, possibly helping to control the spread of tick-borne diseases where it lives — and where you live.

An Ounce of Prevention

Braithwait said that, while opossums can be a nuisance, it's best just to leave them alone. However, if you want an opossum out of your yard, one of the simplest tricks is to secure all garbage and trash can lids and try to feed your pets indoors. If feeding pets indoors isn't possible, Braithwait recommends making sure your pets eat all their food and bringing in what they can't eat. "The best way to attract opossums is to leave your pet food out at night," Braithwait said.

Braithwait said another easy way to make your yard less appealing to opossums is to prune overgrown trees and shrubs, remove brush piles and debris, and clean fallen fruit from trees.

If an opossum takes residence under your house, barricade the entryway during the day since it's sure to be sleeping. At dusk, if the barricade has

Opossum vs. possum

Most Missourians know the opossum by the shortened and informal "possum," but that title rightfully belongs to a family of tree-dwelling mammals native to Australia, New Zealand, and the surrounding islands known as Phalangeridae. This family includes the **common brushtail possum** (*Trichosurus vulpecula*) and the **common ringtail possum** (*Pseudocheirus peregrinus*).

While both animals are marsupials, and the possum's name is derived from the opossum, the common possum species are more closely related to other Australian marsupials, such as the kangaroo, than they are to their American namesake.



been pushed out, the opossum is no longer inside. At this point, cover the entrance with chicken wire or a material that will block the entrance.

Braithwait said that if all else fails, use a live trap with any type of bait, and remove the opossum once you catch it.

Give Opossums a Brake

Next time you see an opossum waddling across the road at night, slow down and let it pass. After all, opossums do a lot of things for you, mostly while you're asleep. They keep your yard and garden clean and free of pests, and they control ticks, which can transmit serious diseases to you and your pets. Opossums may not be pretty to look at, but they're still pretty awesome. ▲

Portions of this article came from *Awesome Opossums!* by Matt Seek, featured in the February 2013 issue of *Xplor*.



Get Outside

in AUGUST

→ Ways to connect with nature



Fragrant sumac

Sumac Stand

Lemonade is a drink we associate with hot summer days. Why not try something a little different — sumacade. Sumac is a shrub that forms thickets along roadsides and fencerows, and it produces cone-shaped clusters of rusty red berries that are ripe for the picking.

- **Collect** a dozen sumac clusters and shake out all the bugs.
- **Submerge** the clusters in a large bowl filled with water, and rub them until the powder that coats the berries turns the water pink.
- **Strain** the water through an old (but clean) tea towel into a pitcher.
- **Add** sugar and ice.

Now you have a new twist on a summer refresher.

SOUTHEAST REGION

Moonlight Canoeing

Friday, Aug. 16 • 7-10 p.m.

Cape Girardeau Conservation Nature Center

2289 County Park Drive, Cape Girardeau, MO 63701

Registration required. Visit mdc.mo.gov/southeastevents.

Call 573-290-5218 for more information.

Ages 12 and older

Watch the near-full moon rise on a warm summer night at Perry County Lake. Expect to see nocturnal creatures and hear the chorus of frogs as we paddle as a group. Canoes and instruction will be provided.



What's the Rub

Male white-tailed deer rub the **velvet** off their antlers in August. Take a hike through the woods and look for their rubs on small trees.

Natural Events to See This Month

Here's what's going on in the natural world.



Snapping turtle eggs begin hatching



Wild cherries ripen



Pocketbook mussels begin breeding

Nature's Bait Annual cicadas emerge this time of year, often referred to as the dog days of summer. These large, winged insects make their presence known with loud, raspy calls. But did you also know they make excellent fishing bait? You can find them near trees in heavily forested areas, woods, and parks.

OZARK REGION

Family Fishing Day

Saturday, Aug. 24 • 10 a.m.-2 p.m.

Twin Pines Conservation Education Center

Rt. 1, Box 1998, Winona, MO 65588

No registration required. Call 573-325-1381 for more information.

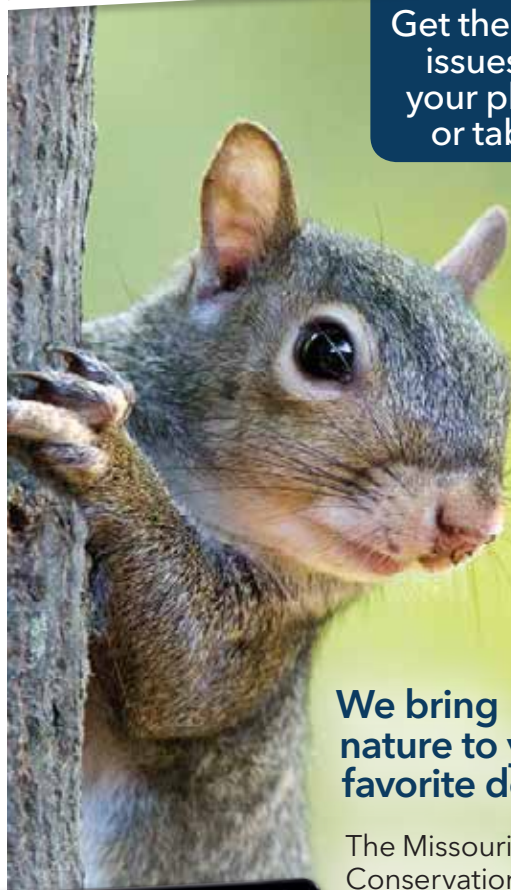
All ages

Do you wish you could get away and enjoy a little time as a family? Join the Twin Pines staff as we host our annual Family Fishing Day. Enjoy grilled hot dogs and lemonade. Compete to see who can catch the most or the biggest fish. Let the kids try their hand at making a fish print tee shirt or other craft. Try your luck at our free prize drawing. Or you can just relax in the shade of one of Missouri's pines. For this event only, no Missouri fishing license is required.



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The Missouri Conservationist magazine app allows you to discover nature on the go. Browse photos and videos, stay up to date on conservation news, and find new ways to get outside.

See what Missouri conservation is all about.



Eastern copperhead newborn

Baby on Board

Female copperheads give birth to live babies in August. If you see one of these beautiful snakes, enjoy watching it from a safe distance. Remember, copperheads are venomous.



**Badgers
begin
breeding**



**Thirteen-lined
and Franklin's
ground
squirrels begin
to gorge**

Download the free app at
mdc.mo.gov/mocon.



Places to Go

SOUTHWEST REGION

Andy Dalton Shooting Range and Outdoor Education Center

Range and training opportunities for both new, experienced shooters and archers

by Larry Archer

✳ As southwest Missouri hunters begin preparing for the fall hunting seasons, it's a safe bet that many of them will head to Andy Dalton Shooting Range and Outdoor Education Center (SROEC) in Greene County, northwest of Springfield.

"Our business kind of follows whatever hunting season is getting ready to open," said Andy Dalton SROEC Manager Mike Brooks. "For example, pretty much the entire month of August we'll be real busy on the shotgun fields, people prepping for dove hunting, which opens Sept. 1. In addition to that, we'll have a lot of folks using the archery ranges, getting ready for the archery deer opener mid-September."

The facility, with its 100-seat classroom, also offers courses for both those just learning the shooting sports and shooters wanting to improve, Brooks said.

"We teach the basic fundamentals of shooting to people, and we teach that in the disciplines of shotgun, rifle, handgun, and archery," he said. "We have basic level courses in all of those disciplines. We also offer some intermediate-type courses in those disciplines as well." To find a class near you, visit mdc.mo.gov/events-s3.

Located within the Bois D'Arc Conservation Area, the range and education center offers visitors access to the trails of the conservation area to complement the center's ¾-mile nature trail.



DAVID STONNER

WHAT
TO
LOOK
FOR
WHEN
YOU
VISIT



Bobcat



Red fox



ANDY DALTON SHOOTING RANGE AND OUTDOOR EDUCATION CENTER

is northwest of Springfield in Greene County. From Springfield, take I-44 to U.S. Highway 160 interchange (Exit 75). Take U.S. 160 west approximately 12 miles to Farm Road 61.

Turn south and go 2 ½ miles to the range entrance. From the south, take I-44 to Route T (Exit 67), go north into the town of Bois D' Arc (approximately six miles). Take Route UU north across the railroad tracks 2 ½ miles to Farm Road 94. Go west ¾ mile on Farm Road 94 to Farm Road 61. Turn north and go ¼ mile, entrance to the range will be on the west side.

N37° 17' 14.28" | W93° 30' 57.6"

mdc.mo.gov/Zfk 417-742-4361

WHAT TO DO WHEN YOU VISIT



Bird-Watching Bois D'Arc Conservation Area, in which Andy Dalton SROEC is located, is included in the Great Missouri Birding Trail (short.mdc.mo.gov/ZxC). The eBird list of birds recorded at Bois D'Arc CA is available at short.mdc.mo.gov/Zx9.



Hiking One ¾-mile nature trail with wildlife viewing station.



Shooting Rifle and pistol Targets up to 100 yards

Shotgun Trap, skeet, and patterning ranges

Archery Static and walkthrough ranges



Painted bunting



Summer tanager



Speckled kingsnake

"Our focus has really shifted back to the shooting sports because that's what our facility is best suited for. If you're going to pull triggers, this is the place to do it."

—Andy Dalton SROEC Manager
Mike Brooks



Indian Pipe

Monotropa uniflora

Status

Not common

Size

Height: to 8 inches

Distribution

Scattered nearly statewide

Indian pipe, also called ghost plant or corpse plant, lacks chlorophyll so it's white, not green. It is sometimes misidentified as a mushroom, but it is a perennial wildflower that blooms from August through October. The urn-shaped flowers are white, eventually turning purple and later black. Since Indian pipe is not dependent on the sun, you will find it in dark, damp places in the woods.

**Did You Know?**

Since an Indian pipe receives energy from feeding off a tree rather than the sun, its flowers rarely survive transplanting. If you happen upon a flowering Indian pipe in the wild, take a picture. Don't take the flower.

**ECOSYSTEM CONNECTIONS**

Indian pipe's roots join with tree roots, a symbiotic relationship for both the tree and the plant. The Indian pipe receives nourishment from the tree while simultaneously expanding the tree's absorption network.

Outdoor Calendar

✱ MISSOURI DEPARTMENT OF CONSERVATION ✱



Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:
May 25, 2019–Feb. 29, 2020

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2019

Nongame Fish Giggling

Impounded Waters, sunrise to sunset:
Feb. 1–Sept. 14, 2019

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2019–Jan. 31, 2020

Paddlefish

On the Mississippi River:
Sept. 15–Dec. 15, 2019

Trout Parks

Catch-and-Keep:
March 1–Oct. 31, 2019

Catch-and-Release:
Nov. 8, 2019–Feb. 10, 2020

HUNTING

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2019

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2019–March 3, 2020

Deer

Archery:

Sept. 15–Nov. 15, 2019
Nov. 27, 2019–Jan. 15, 2020

Firearms:

- ▶ Early Youth Portion (ages 6–15):
Nov. 2–3, 2019
- ▶ November Portion:
Nov. 16–26, 2019
- ▶ Late Youth Portion (ages 6–15):
Nov. 29–Dec. 1, 2019
- ▶ Antlerless Portion (open areas only):
Dec. 6–8, 2019
- ▶ Alternative Methods Portion:
Dec. 28, 2019–Jan. 7, 2020

Dove

Sept. 1–Nov. 29, 2019

Groundhog (woodchuck)

May 6–Dec. 15, 2019

Pheasant

Youth (ages 6–15):
Oct. 26–27, 2019

Regular:
Nov. 1, 2019–Jan. 15, 2020

Quail

Youth (ages 6–15):
Oct. 26–27, 2019

Regular:

Nov. 1, 2019–Jan. 15, 2020

Rabbit

Oct. 1, 2019–Feb. 15, 2020

Sora, Virginia Rails

Sept. 1–Nov. 9, 2019

Squirrel

May 25, 2019–Feb. 15, 2020

Teal

Sept. 7–22, 2019

Turkey

Archery:

Sept. 15–Nov. 15, 2019
Nov. 27, 2019–Jan. 15, 2020

Firearms:

- ▶ Fall: Oct. 1–31, 2019

Waterfowl

See the Waterfowl Hunting Digest or visit short.mdc.mo.gov/ZZx for more information.

Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2019

Woodcock

Oct. 15–Nov. 28, 2019

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.



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The young of Missouri's best-known wild mammal, the woodchuck (*Marmota monax*), also known as the groundhog, is busy digging temporary burrows before moving away to a more permanent home. Find them along fencerows or between timbered areas and open land. Woodchucks begin to fatten up in preparation for hibernation, which begins in October. They emerge sometime in February.

📷 by **Noppadol Paothong**